



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,124	01/20/2004	Olav Finkenwirth	NOS-102	8794
42419	7590	03/09/2007	EXAMINER	
PAULEY PETERSEN & ERICKSON 2800 WEST HIGGINS ROAD SUITE 365 HOFFMAN ESTATES, IL 60195			WANG, EUGENIA	
		ART UNIT	PAPER NUMBER	
		1745		
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE		
3 MONTHS	03/09/2007	PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/761,124	FINKENWIRTH ET AL.	
	Examiner Eugenia Wang	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-35 is/are pending in the application.
  - 4a) Of the above claim(s) 1-23 and 35 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 24-34 is/are rejected.
- 7) Claim(s) 30 is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 1/20/04 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a) All    b) Some \* c) None of:
      1. Certified copies of the priority documents have been received.
      2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
      3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 1/20/04- 8/6/04, 6/23/04 
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election without traverse of Group II (claims 24-34) in the reply filed on January 22, 2007 is acknowledged.

***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

2. The information disclosure statements filed June 23, 2004 and August 16, 2004 have been placed in the application file and the information referred to therein has been considered as to the merits.

***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: [13] (for both figures 1 and 2). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by

the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Objections***

4. Claim 30 is objected to because of the following informalities: the typographical error "roughening the at least one" (line 2). Applicant is advised to remove "the" from the claim so that it reads 'roughening at least one'. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 24-34 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for being used in a solid oxide fuel cell (SOFC), does not reasonably provide enablement for other solid electrolyte fuel cells (i.e. polymer). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. The ceramic layer that serves as both the electrolyte and the insulating layer would only apply to a SOFC, as all of the description of prior art as well as the description of preferred embodiments is drawn to.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 28, 32, and 33 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted element is: the anode layer. Claim 28 does not speak of depositing the anode between the separator and the insulating layer/electrolyte. Upon deposition of the electrolyte layer onto the separator using the method claimed and described, the electrolyte layer would appear to coat the separator and thus lack any material or region wherein the anode could be provided. Therefore the claims should include a step of forming the anode layer before forming the electrolyte layer to form an functional fuel cell arrangement. Since claims 32 and 33 are dependent and claim 28 and fail to rectify the problem, they are rejected as well.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 24-29 and 31-33 are rejected under 35 U.S.C. 102(b) as being anticipated by US 4937152 (Sato et al.).

As to claims 24-29 and 31-33, Sato et al. teach a fuel cell with a solid electrolyte [5], in where the electrolyte [5] is the sealing structure (as applied to claim 24) (col. 4, lines 52-54). Therefore, the sealing structure is the insulating layer and sealing layer of the sealing structure as well. As can be seen by fig. 2a, the electrolyte [5] layer is applied to both the separator [3] and fuel cell via air electrode [4] (as applied to claim

24). It is said that the electrolyte layer [5] can be formed using plasma thermal spraying (as applied to claims 25-27) (col. 3, lines 61-68). Since the electrolyte [5] serves as the insulating layer, its application is done simultaneously in one process step (as applied to claims 28, 29, and 33). Additionally, the plasma coating nozzle would inherently extend to a certain displacement area in order to apply the electrolyte layer and the insulating area, where the nozzle is extended to a point that it covers all required sealing locations (as applied to claims 32 and 33). Fig. 2c shows the fuel cell member [1] (as seen in fig. 2a) as a stack (as applied to claim 31).

8. Claims 24 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6440598 (Mizuno).

As to claims 24 and 30 Mizuno, US teaches a fuel cell stack made up of many fuel cell units, with fig. 1. The electrolyte membrane [22] in each fuel cell unit is a solid polymer electrolyte material (as to claim 24) (col. 5, lines 29-31). Additionally, each fuel cell unit has seals [50, 60] in between the separators [30, 40] (fig. 1). The seals [50, 60] consist of two layers: the first layers [52, 62] are made of comparatively soft rubber foam, and the second layers [54, 64] are made of a harder rubber (col. 5, lines 51-58). (Further explanations will use only one side of the separator [50] for simplicity.) The second layer (sealing layer) [54] is placed against the electrolyte membrane [22], and the first layer (insulating layer) [52] is placed against the separator [40] (as applied to claim 24) (col. 6, lines 19-22). Additionally, it is said that the separator [40] has a roughness that the softer rubber of layer [52] absorbs for better sealing ability (as applied to claim 30) (col. 6, lines 19-24).

9. Claims 24 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 99/54131 (Thompson et al.).

As to claims 24 and 34, Thompson et al. teach a solid oxide fuel cell (SOFC), seen in fig. 4a., with a separator plates [11] sandwiched between anode [14] and cathode [17]. Reference [29] indicates a sealing arrangement between separator plates [11] and comprises of a glass-ceramic insulation layer [30] and a sealing layer [40] of glass or a combination of class and glass ceramic (as applied to claim 24) (p 9, lines 25-27). Additionally, it is said that the glass ceramic insulation layer [30] is deposited onto the cathode-contacting face [12] of the separator plate [11] prior to the assembly of the SOFC, and then layer 40 is used to bond together the separator plates, thus sealing the electrolyte assembly to the separator plates (as applied to claims 24 and 34) (p 9, lines 29-31; p 10, lines 1-2).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugenia Wang whose telephone number is 571-272-4942. The examiner can normally be reached on 8 - 4:30 Mon. - Fri., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EW

GREGG CANTELMO  
PRIMARY EXAMINER

*Gregg Can telmo*  
22 FEB. 2007